

Noting that its ability to serve its customers "is critically dependent on efficient interconnection with Verizon's network,"<sup>47</sup> Lightpath, a facilities based CLEC, contends that Verizon's geographically relevant interconnection points (GRIPs) proposal (the sole issue it considers) would undercut the voluntarily negotiated interconnection between the two companies. In addition, it regards the proposal as poor public policy, imposing inefficient transport obligations on CLECs, and it contends that Verizon has offered no argument in support of the proposal beyond those already found by the Commission to be inadequate.

#### Federal Agencies

The Federal Agencies note the federal government's interest as a large consumer of telecommunications services in New York State, explaining that UNE prices will play a large role in determining the retail prices that will be charged by CLECs and the degree of competitive choice that end users will enjoy. They go on to challenge various aspects of Verizon's studies, contending, among other things, that they fail to reflect current technologies and fail to incorporate all available costs savings. They regard the HAI Model as preferable to Verizon's studies, maintaining that it is more open to public scrutiny and that related models have been accepted by regulators in other jurisdictions.

#### SUMMARY AND OVERALL ASSESSMENT OF THE TWO STUDIES

As already noted, two studies of UNE costs and prices have been submitted in this proceeding--Verizon's own cost studies, and the HAI Model jointly sponsored by AT&T and WorldCom. The studies differ substantially in their method and results, though AT&T, again as already noted, maintained that proper adjustments to Verizon's studies would cause it to produce results that converge with HAI's. Overall, the parties'

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<sup>47</sup> Lightpath's Initial Brief, p.2.

briefs devote vastly more attention to Verizon's studies than to HAI. Verizon's initial brief, for example, devotes only some 60 of its 390 pages to a discussion of HAI; the remainder presents and defends Verizon's own studies. But even AT&T allocates approximately 185 of the 200 pages in its initial brief to challenging and adjusting Verizon's studies and only some 12 pages to presenting its own, and WorldCom declines to discuss HAI at all, simply endorsing AT&T's presentation. Noting those data, Verizon suggests AT&T is abandoning its model or improperly withholding its arguments until its reply brief. Neither allegation is established; while AT&T devotes a substantially greater portion of its reply brief (32 of 105 pages) to its own HAI Model, it fairly uses those pages to respond to Verizon's arguments. But the fact remains that at the briefing stage, at least, the primary focus of all parties is on Verizon's studies and the adjustments to them that may or may not be needed.

That being as it may, my initial task is to examine the two studies in general and determine whether one or the other should be the starting point for analysis or whether it would be proper once again to apply the "convergence" method that emerged in the First Elements Proceeding and that AT&T at least suggests might be proper here. This section of the recommended decision undertakes that inquiry, beginning with descriptions of the two studies.

#### Verizon's Study

Verizon generally begins by attempting to identify the relevant investment associated with each network element.<sup>48</sup> It does so by determining the pertinent material cost, applying a utilization factor to develop a material cost per unit, and then applying investment loadings to capture the additional cost of engineering, furnishing, and installation (EF&I); of power requirements; and of central office land and building (L&B)

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<sup>48</sup> For this account, see, generally, Verizon's Initial Brief, p. 13 et seq.

investment. Verizon describes in detail the manner in which these components are estimated; some of them are discussed further below. To a considerable extent, they are based on Verizon's actual historical data as adjusted and on estimates by its engineers.

To translate investments into monthly costs (and to develop nonrecurring charges, in a separate process that starts by estimating labor costs), Verizon uses annual cost factors (ACFs). According to Verizon, ACFs "are ratios calculated from aggregate account data that represent overall cost relationships for particular categories of equipment"; in contrast to the investment loadings that capture relationships between material costs and investments related to installation, power, and land and building, ACFs represent relationships "between certain types of expenses and either (1) relevant investments, (2) other relevant expenses, or (3) total revenues."<sup>49</sup> Verizon explains the operation of the ACFs as follows:

In determining the recurring cost for a UNE, the total installed investment is first multiplied by an expense-to-investment ACF. This provides an estimate of investment-related expense for the UNE, together with any direct operating expenses. The resulting recurring expense amount is multiplied by an expense-to-expense ACF[,] which factors in certain common overhead costs. A growth revenue loading factor is then applied to incorporate costs related to uncollectibles, Commission assessments, and other revenue-based expenses. The result is an annual recurring cost, which can then be divided by 12 to establish monthly recurring UNE rates.<sup>50</sup>

Verizon notes that the ACFs perform the same functions as the carrying charge factors (CCFs) did in the First Network Elements Proceeding but incorporate certain methodological refinements. The ACFs generated considerable controversy (especially, but far from exclusively, with respect to a forward-looking-to-current

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<sup>49</sup> Id., p. 23.

<sup>50</sup> Id.

[FLC] adjustment, said to undermine their claim to be forward-looking) and are discussed in greater detail below.

Finally, Verizon deaveraged its rates into three geographic zones, as required by the FCC rules. The zones would continue to be Manhattan, major cities, and the remainder of the State. Inasmuch as loops are the only element whose costs were found to vary among the zones, the rates for other elements would not differ by zone.

Verizon contends, overall, that its studies are long-run, fully forward-looking, and in compliance with TELRIC.<sup>51</sup> It asserts that while it does not take account of speculative future innovations--something not required by proper long-run costing--it adjusts its raw expense data to appropriately reflect forward-looking assumptions, and it assumes all UNEs to be provisioned using the most efficient technology currently available; as a result, its total TELRIC cost is substantially below its current actual cost. In summarizing its method, it asserts that "the use of actual data kept the studies grounded in reality; the aggressive assumption of the ubiquitous deployment of current technology, and of current prices, insured that the studies were TELRIC-compliant."<sup>52</sup> It goes on to offer the following examples of its forward-looking assumptions:

Studies for voice grade loops assumed the use of "Next Generation" Digital Loop Carrier ("NGDLC") technology and GR303 integration.

Location of remote terminals in loops was based on a forward-looking redesign of a statistically valid sample of feeder routes.

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<sup>51</sup> In so doing, it once again reserves its objections to TELRIC, expresses agreement with the Eighth Circuit's conclusion that "the TELRIC regulations are unlawful and inappropriate," and it continues to urge "the adoption of alternative approaches that better reflect [its] actual costs." (Verizon's Initial Brief, p. 8.)

<sup>52</sup> Id., p. 11.

Local and tandem switching studies were based on "model switches" designed to efficiently serve current demand levels.

100% SONET fiber ring design was assumed for interoffice transport, and DWDM technology was utilized for OC-48 transport.

Nonrecurring cost studies assumed mechanization, process improvements, and work eliminations not yet achieved in Verizon's actual operations.

Productivity adjustments were reflected in the ACFs for Network and Administration.

The Maintenance ACF for copper cable was adjusted to eliminate any increased maintenance expense associated with aged or deteriorated cable.<sup>53</sup>

Finally, Verizon contends that its costing method avoids any risk of double recovery of either investment costs or expense. Specific double recovery concerns, some of which were identified by the Commission in earlier decisions, are discussed below.

Verizon attributes much of the difference between its existing and proposed rates to refinements in its costing methods, thereby seeking to refute AT&T's suggestion that rate increases could be justified only if costs have increased or rates in the First Proceeding had been miscalculated. (AT&T doubts that costs have increased but Verizon asserts that in many categories they have.) As advances over its earlier method, it identifies updated inputs; a comprehensive study rather than one performed in three phases; changes in the provisioning construct that underlies the cost studies, based on a better understanding of the features required by CLECs and the manner in which UNEs will be provisioned; clarifications by the Commission and by the FCC of how UNEs are to be offered and priced; and methodological refinements such as the FLC and the introduction of deaveraged environmental factors. The controversies engendered by these methodological refinements are discussed below; Verizon here argues that they should be

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<sup>53</sup> Id.

welcomed and not rejected on grounds of novelty or merely because they increase prices.<sup>54</sup>

Verizon argued as well that its studies are well organized into modules and that their inputs can easily be modified for sensitivity analysis. It at least tacitly recognizes that the HAI Model may be more user-friendly than its studies, but contends that the reliability of a model is more important than its ease of use.<sup>55</sup> Finally, it recognizes that its study relies to a degree on proprietary information but sees this as necessary because of its use of "real world" data, some of which is necessarily proprietary. It contends that reliance on proprietary data has not prevented effective analysis and review, inasmuch as the data were made available to Staff and parties who had signed the protective order.

#### The HAI Model

The HAI Model is described as a "bottom-up economic-engineering costing model of [Verizon's] basic local exchange service . . . . It estimates the costs that an efficient firm would incur to provide UNEs for narrowband voice-grade telephone services, but capable of providing access to advanced services."<sup>56</sup> As a bottom-up model, it proceeds to develop UNE costs by modeling the construction of a telecommunications network on the basis of detailed information regarding Verizon's demand quantities, network component prices, and costs and expenses. It first determines the current demand for Verizon's services, using geo-coded customer location data or, where those data are not available, by assigning surrogate locations in accordance with an algorithm. It takes account as well of Verizon's line count data, by wire center as of 1998. The Model then groups customers into clusters, in accordance with

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<sup>54</sup> Id., pp. 32-33.

<sup>55</sup> Id., p. 35.

<sup>56</sup> Tr. 1,285. AT&T does not describe the model in its brief; the summary here is taken from the testimony of its witness Mercer and the model description in Exhibit 314.

specified criteria, and associates the clusters with serving areas that can be efficiently served by available local exchange technology. The serving area is a rectangle calculated by the clustering algorithm and permits the model to estimate the type and amount of outside plant required to serve it, taking account of terrain and other pertinent attributes.

The Model next determines the amount of the various network components needed to support the known demand for the elements and services in question, using "optimization routines" that insure the use of outside plant technically and economically suited to local conditions, the proper choice of feeder technology, the proper choice between wireline and wireless distribution systems, and efficient inter-office fiber optic transport rings. Next, the Model estimates the investment required to purchase and deploy the requisite quantities of each identified component. In doing so, it takes account of public information and information from subject matter experts. The Model then determines the cost of operating and maintaining the network, taking account of capital carrying costs, network operations, maintenance, customer operations, and corporate overhead. Finally, the Model produces output results identifying forward-looking UNE costs.<sup>57</sup>

In its brief, AT&T contends that the record shows the HAI Model conforms to the TELRIC standard as applied by the Commission.<sup>58</sup> It contends as well that the study is fully documented and can be readily understood, tested and manipulated by interested parties. In this regard it points to the documentation provided in Exhibit 314 and to the testimony of witness Donovan in support of the study's outside plant inputs,

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<sup>57</sup> Tr. 1,285-1,290. Much greater detail regarding the HAI Model is provided in Exhibit 314, comprising a model description, a user guide, and input portfolios.

<sup>58</sup> AT&T's Initial Brief, p. 168. AT&T does not elaborate on this claim in brief but offers two transcript references to statements to this effect by its witnesses (id., n. 431) and cites Exhibit 314.

the testimony of witness LoFrisco in support of the corporate overhead and forward-looking network operations factors, and the testimony of witness Hirshleifer in support of the cost of capital input. It notes as well that the study is formatted in Microsoft Excel, which permits the derivation of every formula and cell to be traced. It adds that the study has been modified to correct "the few bona fide calculation mistakes" that Verizon identified and contends that "with these revisions to the study in place, the evidence shows that the engineering assumptions, methodologies, calculations, and inputs underlying the [HAI] study reasonably develop Verizon's forward-looking economic costs to provide UNES."<sup>59</sup>

#### Arguments

The obverse of the greater emphasis on specific flaws in and adjustments to Verizon's studies is the greater stress (albeit in the far fewer briefing pages devoted to it) on the overall qualities of the HAI Model. Consistent with that briefing practice and the state of the record (which includes numerous specific adjustments to the Verizon study that must be addressed), this general section of the recommended decision describes primarily Verizon's overall critique of the HAI Model and AT&T's defense.<sup>60</sup> Overall criticisms of Verizon's model comprise primarily the allegations that it rests too heavily on historical data and is insufficiently forward-looking; and that it therefore produces rates that would permit Verizon to recover (or more) its embedded costs, thereby violating the TELRIC concept and seriously threatening the development of local

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<sup>59</sup> AT&T's Initial Brief, p. 170, citing, for refutation of Verizon's criticisms of the model's inputs and assumptions, Tr. 1,942-2,064.

<sup>60</sup> In presenting these lengthy arguments, I have tried to convey their contours and tenor while avoiding detail that would have made the account far too long. Interested readers are referred to the briefs, and parties should be assured that all arguments, even if not recounted here, have been read and considered.



service competition in New York. These concerns recur in the many specific challenges, criticisms, and proposed adjustments to Verizon's studies and will be fully presented and discussed as they arise.

Verizon characterizes the HAI Model as "a convoluted agglomeration of engineering assumptions, arbitrary allocations and estimating methodologies that are inadequately described, difficult to decipher and often fail to function as intended."<sup>61</sup> It charges, among other things, that the Model is inconsistent with TELRIC; that its outputs have never been validated against real-world data; that it requires continuous correction; and that its results are volatile and, in any event, well below the lowest rates set in any other TELRIC proceeding. Contending that the FCC's Universal Service Proceeding model produces loop costs more than double the highest HAI estimates, Verizon asserts that the HAI Model "makes the patently unreasonable claim that Verizon's entire network could be built for about one-third of Verizon's existing investment, and operated at about one-fifth of Verizon's costs."<sup>62</sup> It charges that the Model's sponsors have failed to address the criticisms of the Hatfield Model expressed by the Commission in the First Elements Proceeding, where the Commission found that model "flawed in concept," and it organizes its brief around the criticisms there expressed by the Commission.

More specifically, Verizon argues, first, that the HAI Model fails to produce proper TELRIC cost estimates, which the FCC intended "to identify an incumbent carrier's actual forward-looking costs based on the deployment of 'efficient new technology' to the extent 'compatible with the existing infrastructure.'"<sup>63</sup> Contending that the AT&T/WorldCom witness acknowledged that a proper TELRIC model should "estimate costs

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<sup>61</sup> Verizon's Initial Brief, p. 326.

<sup>62</sup> Id., p. 328, citing Tr. 2,948; 2,950-2,952.

<sup>63</sup> Id., p. 331, citing 47 CFR §§51.503-51.511; Local Competition Order, ¶685; Tr. 5,838.

that an efficient competitor using forward-looking technology actually would be able to achieve,"<sup>64</sup> Verizon contends that the HAI Model, to the contrary, is premised on the artificial assumption of a brand new, fully functioning network being dropped into place instantaneously. Among other shortcomings, the Model therefore excludes the costs of growth, customer churn, and fluctuations in demand; and it fails, among other things, to take account of the costs for growth or add-on switch capacity.

The Model likewise applies, in Verizon's view, unrealistically high utilization factors that avoid the cost of capacity needed in many parts of the network. It includes as well cost-minimizing assumptions that fail to reflect the realities of an operating network; these include the premise that poles, trenches, and conduit throughout the network are immediately shared by two or three other utilities. Asserting that "even the sponsor's own witnesses have acknowledged that no network will ever look like the HAI hypothetical construct,"<sup>65</sup> Verizon contends that the proponents of the HAI Model have failed to bear their burden of explaining how and why the Model works as it does and of demonstrating that it performs reliably. It points to the Model's need for frequent revisions and corrections and to the portions of its design that are proprietary, and it criticizes the Model for its alleged failures in documentation, its frequent references to unsupported judgement, and the changes over time in how that judgement has been exercised.<sup>66</sup> Among other things, Verizon challenges the "best practices study" cited by the HAI proponents as showing that Verizon's cost could be reduced as

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<sup>64</sup> Tr. 5,844-5,845.

<sup>65</sup> Verizon's Initial Brief, p. 336, citing Tr. 2,930-2,931. It should be noted that the citation is not to testimony by AT&T/WorldCom witnesses in this proceeding but to testimony by Verizon witnesses recounting statements made in other jurisdictions by HAI proponents.

<sup>66</sup> Verizon's Initial Brief, pp. 339-346.

much as 50% (by application of the "forward-looking network operations factor").<sup>67</sup> It charges that this study is "just a distorted mathematical averaging of ARMIS data from a sample of mismatched companies, offered up to suggest conclusions that are inconsistent with the underlying data"<sup>68</sup> and that it lacks any controls to ensure that the reported data involve similar operations performed under comparable circumstances.

Beyond that, Verizon charges, the HAI Model relies on formulas so complex and confusing that it is nearly impossible to determine if mathematical errors have been made. It asserts that AT&T/WorldCom witness Dr. Mercer misconstrued one of his own Model's calculations when it was presented to him on cross examination, an error it says was conceded by AT&T and WorldCom in their response to record request No. 11.<sup>69</sup> Verizon adds that these concerns are compounded by allegedly incomplete and contradictory responses by the Model's sponsors to requests for information and clarification, and it urges that the HAI Model's sponsors be held to the standards of full disclosure and candor imposed on Verizon in a rate proceeding. Citing in particular the anomalous ratios of distribution structure to cable costs said to be shown in its Exhibit 443, Verizon contends that instead of responding fully to the identification of those anomalies, AT&T and WorldCom sought, unpersuasively, to challenge the data used by the exhibit--data, according to Verizon, submitted by AT&T/WorldCom themselves earlier in the proceeding and not updated because they had not significantly changed. It asserts that even the revised versions of the Model submitted in response to the identification of errors continue to be flawed in a variety of ways.<sup>70</sup>

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<sup>67</sup> Exhibit 313.

<sup>68</sup> Verizon's Initial Brief, p. 343, citing Tr. 6,007-6,029.

<sup>69</sup> Verizon's Initial Brief, pp. 347-348, citing Exhibit 440, Tr. 6,003, and Exhibit 454 (on-the-record request No. 11).

<sup>70</sup> Verizon's Initial Brief, p. 355.

Verizon next charges that the Model rests "on a series of erroneous engineering assumptions, arbitrary allocation schemes[,] and novel estimating methodologies that have never been shown to produce reasonable results."<sup>71</sup> Among other things, the Model estimates outside plant on the basis of current rather than potential or ultimate demand; uses a clustering process and geo-code database rejected as inadequate by the FCC in the Universal Service Proceeding;<sup>72</sup> and never demonstrates the reasonableness of its method for estimating the needed amount of distribution cable, which implies skyscrapers several hundred stories tall and then deals with that anomaly by including in the cost estimate only sufficient cable to reach the first 50 floors. Verizon criticizes as well various aspects of the HAI Model's assumptions with regard to switching costs, interoffice facilities, and common costs and expenses.<sup>73</sup> objecting, among other things, to the premise of a linear relationship between a firm's direct costs and its common costs. Verizon further contends that the HAI Model's estimates begin with known system requirements in New York but go on to estimate "a hypothetical infrastructure on the basis of a series of simplifying assumptions and untested algorithms--none of which has been demonstrated to be reasonable and reliable."<sup>74</sup> It contends, for example, that while the Model's sponsors initially dismissed Verizon's argument that HAI's \$14.6 million estimate of the cost of tandem switching capacity was unreasonable, they later revised the Model to increase the estimated number of tandem switches from 9 to 16, the needed investment in tandem switching by more than 640%, and the estimated per minute cost of tandem switching by more than 35%.<sup>75</sup> Verizon charges that the Model's sponsors reject any effort to compare its outputs to the

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<sup>71</sup> Id., p. 356.

<sup>72</sup> Id., p. 357

<sup>73</sup> Id., pp. 360-365.

<sup>74</sup> Id., p. 366.

<sup>75</sup> Id., p. 367, citing Exhibit 319 (Attachment 2).

existing network and urge its adoption solely on the basis of unproven assurances of sound engineering, reasonable techniques, and appropriate inputs.

Verizon points as well to the FCC's criticisms of a related HAI Model and to state commissions that have rejected various versions of it, as well as to this Commission's rejection of its predecessor in the First Elements Proceeding. Finally, Verizon challenges various inputs used in the model which, it says, "were derived by mixing and matching data taken out of context, drawn from different companies, operating in different parts of the country over different periods of time, [and] create an array of mismatched numbers that, again, do not reflect the actual costs any company is likely to incur."<sup>76</sup>

In response, AT&T argues, as a general matter, that the Commission should concern itself with only the most recent version of the HAI Model, which corrects the genuine errors identified during the proceeding, and should disregard the earlier versions noted by Verizon. It disputes as well what it characterizes as Verizon's claim to have only "scratched the surface"<sup>77</sup> in pressing its critique, asserting that Verizon consultant NERA has engaged in extensive criticism of the HAI Model in many jurisdictions and can be assumed to have identified by now all of the Model's flaws. AT&T replies at considerable length to the allegation that it has not been responsive to questions about the Model, describing in detail its responses to Verizon's inquiries as well as to those posed by Staff following the hearing.

More specifically, AT&T first disputes Verizon's charge that the HAI study violated TELRIC principles in its use of excessively high fill factors and of new switch discounts. It contends that the Model provides capacity for additional demand by using fill factors consistent with those already found

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<sup>76</sup> Verizon's Initial Brief, p. 373; specific inputs are criticized at pp. 373-379.

<sup>77</sup> AT&T's Reply Brief, p. 63.

reasonable by the Commission, maintaining that the Model effectively sizes the network at 100% of the local exchange customer base, allows for additional growth, and provides enough capacity to account for the additional volatility that might be associated with Verizon's loss of customers and facilities to competition. (Fill factors and switch discounts are discussed extensively below, in the context of AT&T's proposed adjustments to Verizon's study).

AT&T next disputes the charge of inadequate documentation for and explanation of the study. It contends it clarified various assumptions in its interrogatory responses, but that in some instances, it was required, because of lack of information, to "make assumptions in lieu of replicating the detailed planning and engineering process that an ILEC like Verizon actually goes through in configuring its network,"<sup>78</sup> and that those assumptions were reasonable. It contends that Verizon's criticism of its 50% forward-looking network operations factor ignores the record evidence confirming, through four separate runs of the analysis that take account of Verizon's various criticisms, that the 50% factor is reasonable.<sup>79</sup> It insists the adjustment was based on publicly available Verizon data that Verizon has not shown to be distinguishable from analogous data in other jurisdictions that tended to confirm AT&T's assertions.

AT&T likewise disputes the criticism that the HAI study is complex and confusing, pointing to Verizon's full exploration of the study. It denies that its witness Mercer misread the formula for tandem common equipment investment, explaining that he simply misspoke in a response given subject to check and that the record on the point is clear.

AT&T disputes in detail Verizon's claim that Exhibit 443 demonstrates anomalous results, contending that the data used in the exhibit are not what they were represented to

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<sup>78</sup> Id., p. 75.

<sup>79</sup> Id., pp. 77-80.

be and that the exhibit therefore should be disregarded and the portions of Verizon's initial brief based on it excluded from consideration. AT&T nevertheless responds specifically to two asserted anomalies raised for the first time in brief on the basis of Verizon's further consideration of Exhibit 443, explaining the anomalies and calculating that even if they warrant re-running the model, their effect is only a one-cent change in the statewide loop rate.

Finally, AT&T disputes the claim that the FCC's Universal Service Proceeding model generates loop costs far in excess of HAI's; it attaches to its reply brief an analysis said to show that proper use of the FCC's model generates costs that approximate HAI's.<sup>80</sup>

#### Discussion

In assessing the competing analyses, one must first discount the parties' various "arguments from result." The HAI Model need not be rejected merely because it would reduce existing rates and deny Verizon the recovery of all of its actual costs--something contemplated not only by TELRIC but also by traditional regulation, which allowed recovery only of prudent costs; and Verizon's study is not facially absurd because it would increase rates and make it harder for CLECs to compete. We cannot presume the outcome of proper TELRIC analysis; and if the costs are reasonably and fairly calculated, the price chips should be allowed to fall where they may.

Second, we must recognize that we are not writing on a clean slate. The Commission determined, in the First Elements Proceeding, that while both presentations suffered from serious weaknesses, the HAI Model's predecessor was "more flawed in concept than [Verizon's] study."<sup>81</sup> Verizon's present study differs little enough from the last one in overall method that there is no basis for rejecting it in concept. That does not

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<sup>80</sup> Id., p. 93; Attachments 5-17.

<sup>81</sup> Phase 1 Rehearing Opinion, p. 8.

mean that all its innovations are sound; some are not. All aspects of the study, both old and new, require rigorous criticism, and many will be seen to warrant substantial adjustment. But the Commission has already determined that a study like Verizon's can be a reasonable starting point for TELRIC-based rate setting and that it is not, for example, disqualified by reason of using historical costs as a point of departure.

The HAI Model, meanwhile, needs to overcome the burden of its predecessor's rejection by the Commission, and it is far from clear to me that it has. Its "tenuous link to the real world" remains a serious concern, for in its effort to avoid reliance on Verizon's historical costs, it makes all manner of subjective assumptions. If TELRIC required avoiding reference to historical costs even as a starting point, there might be no alternative to a method like HAI's. But if TELRIC permits--as the Commission found it does--initial reliance on historical costs as long as they are severely examined and modified as needed in light of forward-looking analysis, that sort of company-specific analysis seems more likely to achieve a reasonable result than one that makes extensive use of algorithms based on subjective assumptions.

AT&T's briefs and testimony demonstrate that Verizon has overstated its criticisms of the HAI Model and that some of Verizon's "gotchas" can be explained away. But when all is said and done, the recurring corrections to the Model seem to confirm its weaknesses more than its suppleness, and the Model continues to suffer from the flaws identified by the Commission in the First Elements Proceeding. Verizon likewise overstates its case when it suggests that AT&T and WorldCom have abandoned their support for the HAI Model; AT&T's comment in brief that the case could be decided either on the basis of HAI or on the basis of Verizon's study suitably adjusted is nothing other than lawyerly argument in the alternative. Still, AT&T's ability to reach that result confirms the capacity of Verizon's study to be adjusted, adding to one's confidence that it can be used as the



starting point for analysis without concern that the end-point of the analysis will be thereby determined.<sup>82</sup>

Accordingly, I recommend, for theoretical and practical reasons alike, that the Commission use Verizon's study as the starting point for decision making. As a matter of theory, HAI is a ponderous tool that is too far removed from the reality of Verizon's circumstances to be used when there is an alternative better grounded in real data. As a practical matter, Verizon's study lends itself to adjustment in a manner that appears able to produce a sound result. The remainder of this recommended decision will be devoted to those adjustments.

#### ANNUAL COST FACTORS

##### Introduction

As already mentioned, Verizon used annual cost factors to convert TELRIC investments into annual costs for UNEs and to develop nonrecurring charges. The factors are expressed as ratios whose numerator is pertinent expenses and whose denominator may be relevant investments, other expenses, or revenues. Six of the eight ACFs use an investment denominator; they are identified as (1) the depreciation ACF, (2) the return, interest, and Federal income tax (RIT) ACF, (3) the ad valorem tax ACF, (4) the network ACF, (5) the wholesale marketing ACF, and (6) the other support ACF. The common overhead ACF is an expense-to-expense ratio used to identify and allocate common overhead expenses, special pension enhancement payments, and savings associated with the Bell Atlantic/NYNEX merger. Finally, the gross revenue loading ACF, expressed as an expense-to-revenue ratio, allocates uncollectibles and Commission expenses.

To develop its ACFs, Verizon began with 1998 expenses, which it claims to have adjusted (from \$7.866 billion overall to

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<sup>82</sup> This is not to say that the HAI Model lacks the capacity to be adjusted, but only that the demonstrated adjustability of Verizon's study obviates any potential concern that choosing it as the starting point predetermines the outcome.

\$5.316 billion overall) to insure compliance with TELRIC, to reflect the Commission's decisions in the First Elements Proceeding, and to capture an assumed level of productivity and savings. In addition, it asserts, the ACFs reflect no growth in costs since 1998, thereby sparing UNE customers the effects of inflation. Verizon contends that "the ACFs provide customers with the benefits of productivity gains, even when specific programs have not been identified to achieve these gains, while insulating customers from cost increases, even when the increases are known and certain."<sup>83</sup>

Verizon maintains that its ACFs were developed in a manner largely consistent with that used to develop carrying charge factors (CCFs) in the First Proceeding.<sup>84</sup> It argues as well that substantial reductions in the expenses captured by the ACFs, as urged by some parties, would unlawfully and improperly deny it the opportunity to recover the costs it actually expects to incur in providing UNEs and violate the statutory mandate that rates be just and reasonable. Verizon explains as well that it applied three generic adjustments to its ACF calculations "in order to insure that the ACFs used in this proceeding accurately reflected TELRIC assumptions."<sup>85</sup> The adjustments are said to exclude retail costs, account for inflation and productivity, and apply a forward-looking-to-current conversion.

Objections to the ACFs pertained to the calculation method in general, to the generic adjustments just noted, and to specific ACFs. The general objections are discussed first, followed by a discussion of specific ACFs. Cost of capital issues are considered under the next major heading.

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<sup>83</sup> Verizon's Initial Brief, p. 39.

<sup>84</sup> The differences between the two processes are described at Tr. 2,366-2,369; they are specifically discussed only to the extent they are controversial.

<sup>85</sup> Verizon's Initial Brief, p. 41.

Overall Method and Generic Adjustments

1. Productivity

In estimating the expenses to be allocated through the ACFs, Verizon assumed productivity savings of 2% above inflation for network related expenses (primarily maintenance) and 10% above inflation for non-network related expenses; it asserts that these are the figures that the Commission applied in Phase 1 of the First Proceeding as well as in a Rochester Telephone Corporation proceeding.<sup>86</sup> The CLEC Coalition argues, in general, that application of the concepts used by the Commission in the First Proceeding requires that the productivity figures be substantially increased.

According to the CLEC Coalition, the 10% figure applied by the Commission in the first proceeding represents an annual rate of 5% applied over two years (1995, the base year for the data, to 1997, the year the prices were to take effect). In this proceeding, 1998 data are being used, and the rates will take effect in late 2001, suggesting a productivity factor of at least 15% (5% over three years) or even 20% (if a fourth year is recognized). Citing the testimony of its witness Kahn, it goes on to argue that the 5% annual figure should be regarded as a minimum, given the downward trend in telephone company average costs, the 6.0%-to-6.5% annual productivity revealed by FCC studies, the telephone industry labor productivity advances that exceed even those figures, and the incentive to productivity that can be expected to flow from increased competition. It therefore advocates an annual productivity figure of 5.0% to 5.5%, which it contrasts with the implicit annual rate of 3.33% that follows from Verizon's application of 10% productivity improvement over a three-year period.

Verizon had sought to justify its productivity figure by reference to productivity offsets applied in other jurisdictions in price cap proceedings; but the CLEC Coalition

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<sup>86</sup> Tr. 2,398. The Rochester Telephone proceeding is Case 95-C-0657 et al., First Network Elements Proceeding, et al., Opinion No. 99-8 (issued July 22, 1999).

argues that the productivity offset used in a price cap proceeding "will not reflect the agency's judgement of the rate of productivity growth--the matter at issue in this costing proceeding--but a design parameter intended to help meet the overall set of often competing public policy goals."<sup>87</sup> Among other examples, it cites a Kentucky decision in which the productivity offset was eliminated from the price cap calculation; it explains that the Kentucky Commission was not implying that it foresaw no productivity growth but, rather, expressing its preference to have productivity savings used for infrastructure development rather than price reduction.

With respect to maintenance expenses, the CLEC Coalition would use a 4% productivity adjustment, the effect of extending Verizon's 2% factor to encompass a four-year adjustment period. With regard to copper distribution facilities, however, it would apply the 15% or 20% adjustment, contending that very little copper distribution plant is turning over, and that the 5% per year "adjustment properly reflects the improvement in maintaining whatever copper plant may be in place."<sup>88</sup>

Verizon objects to increasing the productivity adjustment. It argues that the adjustment applied by the Commission in the First Proceeding and replicated here had been premised not on actual cost control programs but merely on the Commission's estimate of what would be reasonable; that it carried the adjustments forward even though it believed them to be obviated by other adjustments in the proceeding; that its studies absorb the effects of inflation and known cost increases such as the 4% annual increase in wages negotiated at conclusion of the 2000 strike; and that there is no basis in the record for the productivity figures offered by witness Kahn. It contends, among other things, that Dr. Kahn misused an FCC staff report, failing to take account of the anomalous nature of one of the

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<sup>87</sup> CLEC Coalition's Initial Brief, p. 19.

<sup>88</sup> CLEC Coalition's Initial Brief, p. 22.

years studied, and that removal of that year would reduce the figure to 4.6%. In addition it says, the Bureau of Labor Statistics data Dr. Kahn relied on to support his 6% productivity figure pertained to a wide range of telecommunications companies, not only local exchange companies; and the productivity gain shown for the industry by the data was 4.9%, not 6.0%. Beyond that, it says Dr. Kahn greatly understated likely inflation levels.

In its reply brief, Verizon takes the CLEC Coalition to task for proposing, in brief, adjustments even higher than those advocated by Dr. Kahn in his testimony. It reiterates its criticisms of that testimony and points to a Maine proceeding in which Dr. Kahn's testimony showed that telephone company costs had increased by 20% from 1990 to 1999. It agrees with the CLEC Coalition that the productivity offset used in a rate cap proceeding may reflect matters other than an estimate of productivity, but it explains that its presentation on those offsets, which showed an average offset of 2.95%, demonstrated annual productivity of about 3.95%.

The CLEC Coalition responds by citing the Commission's decision in the First Proceeding, as well as FCC decisions, as standing for annual productivity factors greater than those implied by Verizon's analysis here.

Both parties direct most of their efforts on this issue to the proper annual productivity figure and pay relatively little attention to what appears to be at the heart of the CLEC Coalition's claim: the interval between "base year" and "rate year" is longer here than it was in Phase 1, and use of the same annual productivity figure therefore should result in a greater overall adjustment. In denying Verizon's petition for rehearing in Phase 1, the Commission said that

The 10% level, properly ambitious, was selected...in view of the likelihood that the development of competition would lead to productivity gains, and to ensure that all resulting savings were anticipated. The productivity factor is applied to expenses

and is generally consistent with the annual total factor productivity (TFP) gain of slightly over 5% contemplated by the PRP [New York Telephone Company incentive regulation] decision. To the extent it is slightly higher, it properly recognizes the additional savings that may be attributed to developments since the PRP, including enactment of the 1996 Act.<sup>89</sup>

Verizon's testimony calls into serious question the 5% and higher annual productivity figures advocated by the CLEC Coalition, but there is no basis either for an annual figure as low as the 3.33% implied by Verizon's proposal to apply a 10% adjustment over the period from 1998 to 2001. A figure so low would certainly be at odds with the Commission's use in the First Proceeding of a "properly ambitious" productivity level. Verizon's own presentation shows that the average productivity factor selected by regulators in price cap proceedings implies an annual productivity level of about 3.95%, and applying that annual figure in this proceeding, over a period somewhat in excess of three years, suggests an overall productivity adjustment of 12.0%, which I recommend. Similarly, the productivity adjustment for maintenance should be 3%, using the Phase 1 annual figure but recognizing the longer interval in the present case. Finally, Verizon has successfully rebutted the CLEC Coalition's proposal to treat copper plant maintenance differently; the premise of no plant turnover has not been established.

## 2. Forward-Looking-to-Current Factor

According to Verizon, CCFs were traditionally calculated by finding the relationship between current expense and current investment and then applying the resulting ratio to convert the investment into customer charges that permit recovery of both investment and expenses. In a TELRIC context, the numerator of this factor--current expense--is significantly

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<sup>89</sup> Phase 1 Rehearing Opinion, pp. 52-53 (footnote omitted).

reduced to reflect forward-looking TELRIC assumptions, and unless the denominator is likewise reduced, the correspondingly lower factor, when applied to forward-looking TELRIC investment, will underrecover expenses to a degree not contemplated by the TELRIC method. Reducing the denominator is impractical, inasmuch as TELRIC investments cannot be determined before the end of the study process. Accordingly, Verizon proposed an adjustment, termed the forward-looking-to-current (FLC) factor, that would divide the ACF by .70, representing the approximate ratio of total incremental costs to the current level of those costs as calculated in the First Proceeding and in proceedings in Massachusetts and Pennsylvania. It applied the FLC factor to the network, wholesale marketing, other support, and common overhead ACFs--those in which a reduction in investment could not be assumed to imply a comparable reduction in expenses. It did not apply the FLC to the depreciation, RIT, and ad valorem ACFs, which are directly related to investment levels, or to the gross revenue ACF, which directly reflects the level of expenses. Verizon notes that even with the FLC applied, its studies reflect only \$5.316 billion in recognizable costs, in contrast to its claimed actual costs of \$7.571 billion.

The FLC drew the fire of numerous parties, most of whom saw it, in AT&T's words, as "nothing more than a poorly disguised attempt by Verizon to recoup its embedded, inefficient operating costs. Such recovery would violate TELRIC . . . ." <sup>90</sup> AT&T goes on to argue that the application to lower TELRIC investment levels of current expense-to-investment ratios, which Verizon characterizes here as an unnecessary and unwarranted reduction in expenses, was cited by Verizon in the First Proceeding as a factor insuring that its cost calculations captured forward- looking efficiency gains and productivity improvements. Indeed, AT&T goes on, the Commission found a need to recognize even greater savings through application of the productivity factors previously discussed. AT&T therefore

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<sup>90</sup> AT&T's Initial Brief, p. 47.

expresses surprise that Verizon would attempt to increase its cost factors by almost 43%, and it contends that doing so would, in effect, substitute an embedded cost analysis for a forward-looking TELRIC analysis.

Verizon claims that it has already reflected prospective efficiencies through such steps as absorbing inflation, applying productivity gains, and capturing merger savings; but AT&T contends that this simply means it has complied with the Phase 1 Opinion. AT&T therefore denies that any of these adjustments justify the FLC factor, which would overwhelm their combined effect. Finally, AT&T maintains "it cannot be a coincidence that Verizon first proposed its egregious FLC factor only after its long-distance entry in New York had been authorized. This proposed adjustment to Verizon's UNE rates is fundamentally anticompetitive in its effect and, inferably, in its intent."<sup>91</sup>

The CLEC Alliance likewise views the adjustment as nothing more than a back-door attempt to recover embedded costs. It argues, for example, that legal and executive expenses, contrary to Verizon's premise, would be reduced "under an assumption of workable competition in which [Verizon's] regulatory efforts to perpetuate its monopoly are assumed away."<sup>92</sup> Citing the FCC's ban on recovering embedded costs in a TELRIC analysis, the CLEC Alliance sees no basis for assuming that expenses in a forward-looking construct would bear the same percentage relationship to investment as do current expenses, nor does it see any basis for assuming that the same 70% factor should be applied to all of the asset categories at issue. Finally, it argues that the FLC factor is inconsistent with other internal Verizon data, according to which the cost of equipment in 1998 and 1999 is in some instances lower than in the past and in other instances higher.

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<sup>91</sup> Id., p. 52.

<sup>92</sup> CLEC Alliance's Initial Brief, p. 32.



The CLEC Coalition argues similarly, suggesting that an alternative method to adjust investment balances to forward-looking levels could be based on current-cost to book-cost ratios and price indices developed by Verizon for the plant and equipment it purchases. The CLEC Coalition also takes issue with Verizon's premise that current costs can be measured by regulated revenues, citing testimony that revenues might be a surrogate for costs only if the market were competitive or Verizon's monopoly operations were subject to rate of return regulation, neither of which is the case.

WorldCom asserts that "the FLC factor increases Verizon's annual recovery of expenses by a staggering \$225 million."<sup>93</sup> It argues that Verizon admitted in cross-examination that the FLC factor would enable it to recoup the expense reductions that result from applying historical cost factors to a TELRIC-consistent investment base reflecting the forward-looking technology contemplated in the first proceeding.<sup>94</sup> Z-TEL likewise sees the FLC factor as inconsistent with TELRIC.

Verizon responds that the FLC is needed to avoid a windfall to CLECs--in effect, a double count of TELRIC-related savings. It contends that the CLECs are arguing for the preservation of existing rate methods, even if shown to be inapposite in the TELRIC environment. It disputes the premise that the Commission previously rejected an FLC, explaining that its presentation in the First Proceeding had not reduced the numerator of the CCF to reflect forward-looking assumptions. The CLECs, meanwhile, reiterate their charge that Verizon would use the FLC to recover embedded costs, in violation of TELRIC, and that the effect of the FLC is to increase ACFs by about 43%. AT&T points to the Commission's statement, in adopting the Phase 1 productivity adjustment discussed in the previous section, that "[Verizon]... is unpersuasive when it argues that

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<sup>93</sup> WorldCom's Initial Brief, p. 52.

<sup>94</sup> Id., p. 53, citing Tr. 5,317-5,321.

forward-looking expense reductions are adequately captured by application of historical CCFs to a presumed lower investment base"<sup>95</sup>; and it charges that Verizon is ignoring that decision.

AT&T correctly cites the Phase 1 determination, but it disregards an important distinction between the Phase 1 CCFs and the ACFs proposed here. In Phase 1, the CCFs was calculated for the most part as the ratio of historical expenses to historical investment, and the Commission was properly unpersuaded that application of that ratio to TELRIC investment would adequately capture pertinent forward-looking savings. Here, in contrast, the numerator of Verizon's proposed ACF is forward-looking TELRIC expense, yet the denominator remains historical investment; the ratio, accordingly, is lower than it would have been in Phase 1. That lower ratio is still applied to forward-looking TELRIC investment, thereby in effect double counting the TELRIC adjustment, as Verizon argues. Seen in this light, the FLC does not convert TELRIC costs to embedded; it merely tries to restore a "twice-TELRICed" cost calculation to one that recognizes TELRIC only once--as was the case initially in Phase 1.

That the FLC appears sound in concept, however, does not necessarily mean that it is correctly calculated. Verizon derived its FLC by using revenues as a proxy for investment (since TELRIC investment could not yet be estimated) and finding that forecast TELRIC revenues came to only 70% of historical revenues in the base year of 1995. Verizon's response to Staff's post-hearing question PSC-VZ-1 now provides an estimate of TELRIC investment, and that investment, overall, comes to 75.3% of historical investment in the 1998 base year for this case. That comparison (rounded to 75%) is more apt than the one Verizon used, and the FLC should be reduced in a manner consistent with it. (The availability of the TELRIC investment might suggest recomputing the ACF on that basis, using forward-looking expense in the numerator and forward-looking investment

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<sup>95</sup> AT&T's Reply Brief, pp. 3-4, citing Phase 1 Opinion, p. 98.